

F005359US00

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:  
a semiconductor chip and a light-receiving element formed in the semiconductor chip for receiving an optical signal; and  
an optical signal transfer device connected to the light-receiving element for transferring the optical signal into the semiconductor chip.
2. A semiconductor device according to claim 1, wherein the optical signal transfer device is an optical fiber.
3. A semiconductor device according to claim 2, further comprising a package that seals the semiconductor chip and a part of the optical fiber.
4. A semiconductor device according to claim 1, wherein the semiconductor chip is mounted on a mounting substrate.
5. A semiconductor device comprising:  
a mounting substrate and an optical signal transfer device disposed in the mounting substrate for transferring an optical signal;  
a plurality of semiconductor chips mounted on the mounting substrate;  
and  
a light-receiving element formed in the semiconductor chip and connected to the optical signal transfer device for receiving the optical signal, wherein the signal is transferred among the plurality of semiconductor chips through the optical signal transfer device.
6. A semiconductor device comprising:  
a semiconductor chip and a light-receiving element formed on the semiconductor chip for receiving an optical signal; and

Sub  
144

0054550-090100

F005359US00

~~an optical signal transfer device connected to the light-receiving element for transferring the signal from an arithmetic processing apparatus as an optical signal into the semiconductor chip.~~

7. A semiconductor device according to claim 6, wherein the signal is a clock signal.

8. A semiconductor device according to claim 6, wherein the optical signal transfer device is provided in a mounting substrate on which the semiconductor chip is mounted.

9. A semiconductor device according to claim 6, wherein the optical signal transfer device is a light-emitting surface that is formed in the mounting substrate.

10. A semiconductor device according to claim 6, wherein the optical signal transfer device is formed in a lattice configuration and disposed in the mounting substrate.

11. A semiconductor device according to claim 8, wherein the light-receiving element is formed in a convex shape on the semiconductor chip on a side thereof that is opposite to the mounting substrate, and the light-receiving element is inserted in the optical signal transfer device to thereby connect the light-receiving element to the optical signal transfer device.